AMENDMENTS TO THE CLAIMS

1. (currently amended) An image-processing method, which carries out a sharpening process by subtracting from the image data of the original image, the second-order differential with respect to each pixel, the second order differential being obtained by 1) defining the distribution of image data of an original image as a function, and 2) taking the Laplacian of that function ,

wherein the degree of the sharpening process is controlled by altering according to image data subjected to the sharpening process, a first parameter for determining the size of the second-order differential to be subtracted from the image data of the original image.

2. (original) The image-processing method as defined in claim 1, wherein: data that is representative of the characteristic of the image data is extracted from the inputted image data, and the first parameter is set by inputting this data to a predetermined algorithm.

3. (currently amended) An~~The~~ image-processing method ~~as defined in claim 2,~~ which carries out a sharpening process by subtracting from the image data of the original image the second-order differential with respect to each pixel, the second order differential being obtained by 1) defining the distribution of image data of an original image as a function, and 2) taking the Laplacian of that function;

wherein the degree of the sharpening process is controlled by altering a first parameter for determining the size of the second-order differential to be subtracted from the image data of the original image;

wherein data that is representative of the characteristic of the image data is extracted from the inputted image data, and the first parameter is set by inputting this data to a predetermined algorithm; and

wherein the data that is representative of the characteristic of the image data is an average value of chrominance differential values of respective pixels contained in the image data.

4. (original) The image-processing method as defined in claim 3, wherein the predetermined algorithm sets the value of the first parameter which allows the difference between a function for finding the average value of chrominance differential values that varies with the first parameter and an ideal straight line that varies in proportion to the first parameter to become not less than a predetermined value, as the first parameter determining the size of the second-order differential.

5. (original) The image-processing method as defined in claim 1, wherein the sharpening process using the second-order differential is carried out on pixel data of the original image for each of color components.

6. (previously presented) An image-processing method, which carries out a sharpening process by subtracting from the image data of the original image the second-order differential with respect to each pixel, the second order differential being obtained by first defining the distribution of image data of an original image as a function,

wherein: the second-order differential is obtained by the sum total of differences in value between a target pixel and a plurality of pixels in the vicinity thereof, and each of the differences is multiplied by a coefficient, with the coefficient being varied depending on the size of the corresponding difference.

7. (original) The image-processing method as defined in claim 6, wherein: the coefficient is set to be different values depending on cases in which the difference is greater than a second parameter and in which the difference is smaller than the second parameter, and the degree of the sharpening process is controlled by altering the second parameter.

8. (currently amended) An~~The~~ image-processing method~~ as defined in claim 7,~~ which carries out a sharpening process by subtracting from the image data of the original image the second-order differential with respect to each pixel, the second order differential being obtained by first defining the distribution of image data of an original image as a function,

wherein: the second-order differential is obtained by the sum total of differences in value between a target pixel and a plurality of pixels in the vicinity thereof, and each of the differences is multiplied by a coefficient, with the coefficient being varied depending on the size of the corresponding difference;

wherein the coefficient is set to be different values depending on cases in which the difference is greater than a second parameter and in which the difference is smaller than the second parameter, and the degree of the sharpening process is controlled by altering the second parameter; and

wherein data that is representative of the characteristic of the image data is extracted from the inputted image data, and the second parameter is set by inputting this data to a predetermined algorithm.

9. (original) The image-processing method as defined in claim 6, wherein the sharpening process using the second-order differential is carried out on pixel data of the original image for each of color components.

10. (previously presented) An image-processing method, which carries out a sharpening process by subtracting from the image data of the original image the second-order differential with respect to each pixel, the second order differential being obtained by 1) defining the distribution of image data of an original image as a function, and 2) taking the Laplacian of that function ,

wherein the second-order differential has at least one of an upper limit and a lower limit, and the degree of the sharpening process is controlled by altering a third parameter for determining the upper limit and/or the lower limit.

11. (previously presented) The image-processing method as defined in claim 10, wherein said at least one of an upper limit and the lower limit is determined by a value obtained by dividing the third parameter by a chrominance differential value.

12. (original) The image-processing method as defined in claim 10, wherein: data that is representative of the characteristic of the image data is extracted from the

inputted image data, and the third parameter is set by inputting this data to a predetermined algorithm.

13. (original) The image-processing method as defined in claim 10, wherein the sharpening process using the second-order differential is carried out on pixel data of the original image for each of color components.

14. (currently amended) A recording medium, which has an image-processing program recorded therein, the image-processing program being arranged to allow a computer to carry out a sharpening process by subtracting from the image data of the original image the second-order differential with respect to each pixel, the second order differential obtained by 1) defining the distribution of image data of an original image as a function, and 2) taking the Laplacian of that function,

wherein the computer is allowed to execute a process for controlling the degree of the sharpening process by altering according to image data subjected to the sharpening process, a first parameter for determining the size of the second-order differential to be subtracted from the image data of the original image.

15. (currently amended) A~~The~~ recording medium ~~as defined in claim 14,~~ which has an image processing program recorded therein, the image-processing program being arranged to allow a computer to carry out a sharpening process by subtracting from the image data of the original image the second-order differential with respect to each pixel, the second order differential obtained by 1) defining the distribution of image data of an original image as a function, and 2) taking the Laplacian of that function,

wherein the computer is allowed to execute a process for controlling the degree of the sharpening process altering a first parameter for determining the size of the second-order differential to be subtracted from the image data of the original image; and

wherein: the computer is arranged to execute processes in which data that is representative of the characteristic of the image data is extracted from the inputted image data, and the first parameter is set by inputting this data to a predetermined algorithm.

16. (original) The recording medium as defined in claim 15, which has an image-processing program recorded therein,

wherein: the data that is representative of the characteristic of the image data is an average value of chrominance differential values of respective pixels contained in the image data.

17. (original) The recording medium as defined in claim 16, which has an image-processing program recorded therein,

wherein the predetermined algorithm sets the value of the first parameter which allows the difference between a function for finding the average value of chrominance differential values that varies with the first parameter and an ideal straight line that varies in proportion to the first parameter to become not less than a predetermined value, as the first parameter determining the size of the second-order differential.

18. (original) The recording medium as defined in claim 14, which has an image-processing program recorded therein,

wherein the sharpening process using the second-order differential is carried out on pixel data of the original image for each of color components.

19. (previously presented) A recording medium, which has an image-processing program recorded therein, the image-processing program being arranged to allow a computer to carry out a sharpening process by subtracting from the image data of the original image the second-order differential with respect to each pixel, the second order differential being obtained by first defining the distribution of image data of an original image as a function,

the computer being allowed to execute a process wherein: the second-order differential is obtained by the sum total of differences between a target pixel and a plurality of pixels in the vicinity thereof, and each of the differences is multiplied by a coefficient, with the coefficient being varied depending on the size of the corresponding difference.

20. (original) The recording medium as defined in claim 19, which has an image-processing program recorded therein,

wherein the computer is allowed to execute a process wherein: the coefficient is set to be different values depending on cases in which the difference is greater than a second parameter and in which the difference is smaller than the second parameter, and the degree of the sharpening process is controlled by altering the second parameter.

21. (currently amended) A~~The~~ recording medium ~~as defined in claim 20~~, which has an image processing program recorded therein, the image-processing program being arranged to allow a computer to carry out a sharpening process by subtracting from the image data of the original image the second-order differential with respect to each pixel, the second order differential being obtained by first defining the distribution of image data of an original image as a function,

the computer being allowed to execute a process wherein: the second-order differential is obtained by the sum total of differences between a target pixel and a plurality of pixels in the vicinity thereof, and each of the differences is multiplied by a coefficient, with the coefficient being varied depending on the size of the corresponding difference;

wherein the computer is allowed to execute a process wherein: the coefficient is set to be different values depending on cases in which the difference is greater than a second parameter and in which the difference is smaller than the second parameter, and the degree of the sharpening process is controlled by altering the second parameter, and

wherein: the computer is arranged to execute processes in which data that is representative of the characteristic of the image data is extracted from the inputted image data, and the second parameter is set by inputting this data to a predetermined algorithm.

22. (original) The recording medium as defined in claim 19, which has an image-processing program recorded therein,

wherein the sharpening process using the second-order differential is carried out on pixel data of the original image for each of color components.

23. (previously presented) A recording medium, which has an image-processing program recorded therein, the image-processing program being arranged to allow a computer to carry out a sharpening process by subtracting from the image data of the original image the second-order differential with respect to each pixel, the second order differential being obtained by 1) defining the distribution of image data of an original image as a function, and 2) taking the Laplacian of that function,

the computer being allowed to execute a process wherein: the second-order differential is provided with at least one of an upper limit and/or a lower limit, and the degree of the sharpening process is controlled by altering a third parameter for determining the upper limit and/or the lower limit.

24. (previously presented) The recording medium as defined in claim 23, which has an image-processing program recorded therein,

wherein the computer is allowed to execute a process wherein: at least one of the upper limit and the lower limit is determined by a value obtained by dividing the third parameter by a chrominance differential value.

25. (original) The recording medium as defined in claim 23, which has an image-processing program recorded therein,

wherein the computer is allowed to execute a process wherein: data that is representative of the characteristic of the image data is extracted from the inputted image data, and the third parameter is set by inputting this data to a predetermined algorithm.

26. (original) The recording medium as defined in claim 23, which has an image-processing program recorded therein,

wherein the computer is allowed to execute a process wherein: the sharpening process using the second-order differential is carried out on pixel data of the original image for each of color components.

27. (currently amended) An image-processing method, wherein a sharpening process is carried out based on the following equation:

$g(i, j) = f(i, j) - k \nabla'^2 f(i, j)$,

wherein f(i, j) is a pixel value of a target pixel in an original image, g(i, j) is a pixel value of the target pixel after carrying out the sharpening process with respect to the original image, and $\nabla'^2 f(i, j)$ is a function obtained by carrying out a Laplacian process based on the pixel value of the target pixel and pixel values of a plurality of pixels adjacent to the target pixel, and

a resulting output value of g(i, j) from the sharpening process is adjusted by ~~setting~~ altering a value "k" variable according to image data subjected to the sharpening process.

28. (currently amended) An~~The~~ image processing method ~~as set forth in claim 27~~, wherein~~:~~ a sharpening process is carried out based on the following equation:

$g(i, j) = f(i, j) - k \nabla'^2 f(i, j)$,

wherein f(i, j) is a pixel value of a target pixel in an original image, g(i, j) is a pixel value of the target pixel after carrying out the sharpening process with respect to the original image, and $\nabla'^2 f(i, j)$ is a function obtained by carrying out a Laplacian process based on the pixel value of the target pixel and pixel values of a plurality of pixels adjacent to the target pixel, and

a resulting output value of g(i, j) from the sharpening process is adjusted by setting a value "k" variable,

in the Laplacian process, adjacent pixels whose pixel values are not different from that of the target value by more than a parameter θ are not subjected to the Laplacian process; and

a resulting output value for g(i, j) from the sharpening process is adjusted using the parameter θ which is a set variable.

29. (currently amended) . An~~The~~ image processing method ~~as set forth in claim 27,~~ wherein~~:~~ An image-processing method, wherein a sharpening process is carried out based on the following equation:

$g(i, j) = f(i, j) - k \nabla'^2 f(i, j),$

wherein f(i, j) is a pixel value of a target pixel in an original image, g(i, j) is a pixel value of the target pixel after carrying out the sharpening process with respect to the original image, and $\nabla'^2 f(i, j)$ is a function obtained by carrying out a Laplacian process based on the pixel value of the target pixel and pixel values of a plurality of pixels adjacent to the target pixel, and

a resulting output value of g(i, j) from the sharpening process is adjusted by setting a value "k" variable,

said function has at least one of an upper limit and a lower limit;

said upper limit or said lower limit is a set variable;

said upper limit or said lower limit which is a set variable is obtained by dividing a parameter λ by a chrominance difference value between said target pixel and one of the pixels adjacent to said target pixel; and

a resulting output value g(i, j) from the sharpening process is adjusted using the parameter λ which is a set variable.

30. (previously presented) The image processing method as set forth in claim 29, wherein:

of all the pixels adjacent to said target pixel, said one of the pixels adjacent to said target pixel has the largest chrominance difference value from said target pixel.

31. (previously presented) An image-processing method, wherein a sharpening process is carried out based on the following equation:

$g(i, j) = f(i, j) - k \nabla'^2 f(i, j),$

wherein f (i, j) is a pixel value of a target pixel in an original image, g(i, j) is a pixel value of the target pixel after carrying out the sharpening process with respect to the original image, and $\nabla'^2 f(i, j)$ is a function obtained by carrying out Laplacian process

based on the pixel value of said target pixel and pixel values of a plurality of pixels adjacent to said target pixel, and

in the Laplacian process, adjacent pixels whose pixel values are not different from that of the target value by more than a parameter θ are not subjected to the Laplacian process; and

a resulting output value for g(i, j) from the sharpening process is adjusted using the parameter θ which is a set variable.

32. (previously presented) The image processing method as set forth in claim 31, wherein:

said function has at least one of an upper limit and a lower limit;

said upper limit or said lower limit is a set variable;

said upper limit or said lower limit which is a set variable is obtained by dividing a parameter λ by a chrominance difference value between said target pixel and one of the pixels adjacent to said target pixel; and

a resulting output value g(i, j) from the sharpening process is adjusted using the parameter λ which is a set variable.

33. (previously presented) The image processing method as set forth in claim 32, wherein:

of all the pixels adjacent to said target pixel, said one of the pixels adjacent to said target pixel has a largest chrominance difference value from said target pixel.

34. (previously presented) An image-processing method, wherein a sharpening process is carried out based on the following equation:

$g(i, j) = f(i, j) - k\, \nabla'^2 f(i, j)$,

wherein f(i, j) is a pixel value of a target pixel in an original image, g(i, j) is a pixel value of said target pixel after carrying out the sharpening process with respect to the original image, and $\nabla'^2 f(i, j)$ is a function obtained by carrying out Laplacian process

based on the pixel value of said target pixel and pixel values of a plurality of pixels adjacent to said target pixel, and

said function has at least one of an upper limit and a lower limit;

said upper limit or said lower limit is a set variable;

said upper limit or said lower limit which is a set variable is obtained by dividing a parameter λ by a chrominance difference value between said target pixel and one of the pixels adjacent to said target pixel; and

a resulting output value g(i, j) from the sharpening process is adjusted using the parameter λ which is a set variable.

35. (previously presented) The image processing method as set forth in claim 34, wherein:

of all the pixels adjacent to said target pixel, said one of the pixels adjacent to said target pixel has a largest chrominance difference value from said target pixel.